

ABSTRACT

A semiconductor component having smooth, void-free conductive layers and a method for manufacturing the semiconductor component. Surface features such as gate structures are formed on a semiconductor substrate. A layer of insulating material is formed on the gate structures and a layer of polysilicon is formed on the layer of insulating material. The layer of polysilicon is annealed in a hydrogen ambient to redistribute the silicon atoms of the polysilicon layer. Redistribution of the atoms fills voids that may be present in the layer of polysilicon and smoothes the surface of the layer of polysilicon. Another layer of polysilicon is formed over the annealed layer of polysilicon. This polysilicon layer is annealed in a hydrogen ambient to redistribute the silicon atoms and smooth the surface of the polysilicon layer, thereby forming a subsequently annealed polysilicon layer. Control gate structures are formed from the subsequently annealed polysilicon layer.